

times the common usage in Iceland, as we have already observed, was to count by the weeks of each of the "misseri" instead of referring to months. According to Prof. Munch, the Northmen originally divided the week into five days, the so-called *Fimt* (Fifth), the later hebdominal week having been borrowed, like the names of the days, from the south. The latter, in spite of their apparent northern character, are in point of fact mere adaptations of the names of the Roman deities Mars, Mercury, Jove, and Venus, which reappeared in the old northern calendar as Ty, Odin, Thor, and Freja. Saturn alone failed to find a representative in this system of nomenclature, for to the genuine Northman it would seem that the last day of the week could have no other designation than that of "Laugar-dág," or "Thvott-dág," washing or bathing day. And this name has been retained through the intervening ages, being the only one that escaped the ban of the Church, when a century after the establishment of Christianity an episcopal ordinance interdicted the application of the names of heathen gods to the several days of the week, which were thenceforth known in accordance with their order of sequence, although *Sunnudág* and *Mánadág* in course of time replaced the older designations of "First Day" and "Second Day."

The new style was introduced into Iceland at the same time as in the foster- and mother-lands of Denmark and Norway, and in accordance with a royal edict, the day after February 18 in the year 1700 was reckoned as March 1. From that period to the present time the Icelandic calendars have given double tables based on the Gregorian, and the locally modified Julian system. A few modifications have, however, been made in modern times in the older national methods of intercalation, "summer day" falling on the Thursday between April 19 and 25, while in strict accordance with the past methods of computation it should fall on the Thursday between April 21 and 27. The intercalated week of the old "Sumar-auke" has also been shifted from midsummer to the close of the summer measure, and thus falls partly in September, "Haustmáñadr," and partly in October, "Gormáñadr."

THE ORFE, A FISH RECENTLY ACCLIMATISED IN ENGLAND

THE fine specimens of the "Orfe" presented by his Grace the Duke of Bedford to the International Fisheries Exhibition, and exhibited in one of the tanks of the Aquarium, fully deserve the notice of all interested in the culture of our freshwater fishes. They are some of a number which Lord Arthur Russell succeeded in importing from Wiesbaden in March, 1874, and which were placed in a pond at Woburn Abbey in Bedfordshire. Owing to the succession of cold summers these "Orfes" did not breed until last year, and we may hope that this season will also prove favourable. This species may now be considered as acclimatised, and will become a permanent acquisition to our ornamental waters.

The Orfe, whose bright yellow or golden colours resemble those of the Goldfish or Golden Tench, is, like these two latter fish, a permanent variety of a wild and much less brightly coloured race, belonging to the same genus as, but specifically distinct from, the Chub, with which it was confounded by some writers. Its systematic name is *Leuciscus idus*; of vernacular names those of "Aland" and "Nerfling" are those most generally used in Germany, whilst the Swedes know it by the name of "Id." The name "Orfe" refers to the golden-coloured variety only, which has been cultivated for centuries in inclosed waters in Bavaria. Willughby knew it well; he says in his "Historia Piscium" (Oxon, fol. 1686), p. 253:—"At Augsburg we saw a most beautiful fish, which they call the 'Root oerve,' from its vermillion colour, like that of a pippin apple, with which the whole

body is covered, except the lower side, which is white." As in the Golden Tench, individuals of pure golden-yellow tints are scarce, the majority retaining marks of their origin from a plain-coloured ancestry in brownish spots or blotches on some part of their body. The ordinary size of this species is ten or twelve inches (and this is about the size of those at the Exhibition); but it is known to have attained to double that size and to a weight of six pounds.

The Orfe will thrive in all inclosed waters suitable to Roach and Goldfish; as an ornamental fish it is preferable to the latter on account of its larger size, livelier habits, and rapid reproduction; it takes the bait, and is eaten in Bavaria. As an ornamental domestic fish the Goldfish will always hold its own, but for waters of any extent and free from Pike and Perch we know of no more ornamental fish than the Orfe, a worthy rival of the Golden Tench, which has been so successfully acclimatised by Lord Walsingham; and we trust that his Grace will soon rear a sufficient number to secure to the Orfe a home in many different parts of the country. A. G.

SNOW AND ICE FLORA¹

THIS work, which is included in Baron Nordenskjöld's studies and investigations arising out of his travels in the extreme north, is quite as interesting and important as regards the snow and ice flora of the Alps and Arctic regions, as the great traveller had led us to expect (see NATURE, vol. xxviii. p. 39). It is, as far as the materials on hand permit, an exhaustive account of the subject of which it treats.

As might be expected, the first pages of the work are devoted to "red snow," than which there are few subjects that have more engaged the attention of scientific travellers in the Arctic districts. This little plant has been found in the Arctic regions of Europe and America, thereby suggesting, as Prof. Wittrock observes, the former union of the two continents. It also appears in the north of Scandinavia, on the high Alps, the Pyrenees, and the Carpathians. Various were the opinions as to whether it belonged to the animal or vegetable world, and many the names by which it was designated. The prettiest of these names is certainly that given to it by C. Agardh—"the snow-flower." While, however, "red snow" will probably continue to be its trivial name, Prof. Wittrock has restored to it the scientific name of *Sphaerella nivalis*, bestowed on it by Sommerfelt in 1882.

Until Nordenskjöld's expedition to Greenland in 1870, this alga was thought to be the only living plant on the ice and snow; but during their wandering on the inland ice, Nordenskjöld and Berggren discovered several algae, among which was one new to science, namely, *Ancylonema Nordenskjöldii*, which was seen in such abundance, that it gave to the adjacent ground a peculiar purple-brown colour. Other algae seemed to be mixed up with the fine sand (ice-dust, *kryokonit*), which here and there spreads a thin covering on the ice, or lies in a thick layer at the bottom of the funnel-shaped holes which are formed in it. Baron Nordenskjöld lays great stress on the important part which these algae, and especially *Ancylonema*, play in the melting of ice. "The dark mass (algæ)," he says, "absorbs a larger portion of the sun's rays than the white ice, and therefore produces deep holes in the ice, which in a great degree conduce to its melting." He even thinks that this *Ancylonema* once performed the same office in Scandinavia, adding, "We have, perhaps, to thank this plant that the ice deserts which formerly covered Europe and America with a coating of ice, now give place to shady woods and undulating fields of corn."

¹ "Om Snöns och Isens Flora. Särskildt i de Arktiska Trakterna." Af Veit Brecher Wittrock. Ur "A. E. Nordenskjöld, Studier och forskningar föranledda af mina resor i höga Norden." (Stockholm, 1883.)

Subsequent investigation proved that the ice and snow flora was richer than had been anticipated. Dr. Kjellman found at Spitzbergen not only "red snow," but "green snow." Some of the "material" was brought home in a dry state; on being afterwards examined, it was found to contain above a dozen other plants, some of which were of a class even lower than "red snow"; others belonged to plants of higher organisation. Mosses also in the protonemata state were met with, but of very diminutive size. The ice and snow vegetation of this and other localities is described in detail. Special interest invests the kryokonit¹ with which all the specimens from South Greenland were mixed, because it was found to contain a number of germinating spores of *Sphaerella nivalis*. During the winter of 1880-81 Prof. Wittrock was fortunate enough to enable some of these spores to develop themselves, hence it was considered that they were resting spores. They endure, without taking any harm, to be during the greater part of the year, frozen up in the ice and snow of the Arctic regions, and also to be dried up for some months by the heat of the sun. The author's observations on the conditions of plant life in the Arctic regions and on the glaciers of high northern tracts are particularly interesting. He observes that these tracts are certainly not entirely deprived of the powerful and life-giving influence of the sun's rays. They are, it is true, during a great part of the year (in winter) enveloped in continual darkness and gloom; but at another period (in summer) they are in the enjoyment of perpetual light. During this period the sun's rays, although oblique, may exercise a powerful influence. At midday the heat may be surprisingly strong. Nordenskjöld found that the warmth of the air a short distance above the surface of the ice at midday in July rose to 25°-30° of Celsius. It is evident that a great melting would take place on the surface of the glaciers and snow-fields. There is then formed a layer of snowy and icy water, which, though not much above the zero of Celsius, is enough to satisfy the demands for warmth of this portion of the simplest organisations of the vegetable kingdom. That they thrive under these hard conditions of life is evident from the immense multitudes in which they occur. "Probably," adds the author, "there is no other species on earth which is richer in individuals than red snow."

Prof. Wittrock gives a full description of the structure and fructification of these minute plants; then follows a summary of their characteristics. The latter may be thus briefly stated:—The flora of the ice- and snow-fields consists almost entirely of algæ of microscopical size and of extremely low organisation; the greater part of the plants are unicellular; they are sometimes solitary, sometimes in colonies. The fructification is very simple, asexual, and of one kind only. These algæ are generally of bright and full colours. The "snow-flower" is blood-red, *Ancylonema Nordenskjöldii* purplish-brown; many *Conferveæ* and *Desmidieæ* are bright green. The land vegetation is represented entirely by mosses, which appear to be nearly in the same low state of development as the algæ.

The orders, families, genera, and species of which the Arctic flora is composed are well arranged in tabular form at pp. 112, 113. In this table the flora of the snow is distinguished from that of the ice. It will be seen that the most common plant is "red snow"; the next in frequency is *Ancylonema Nordenskjöldii*. The snow flora is richer than that of the ice. The former includes thirty-seven species; the latter ten only. The mosses and *Conferveæ* belong exclusively to the snow flora. *Ancylonema* is the only plant which is limited entirely to the ice flora. Of *Phycochromophyceæ* the ice flora has two species only, while that of the snow possesses ten. The snow flora of Spitzbergen is rich in *Conferveæ*, that of Lapland in *Des-*

midieæ. In the middle north the *Phycochroms* prevail. It is stated that *Bacteria termo* is occasionally found within the limits of the ice and snow flora. *Chytridium hematococci* may also, observes the author, belong to the Arctic flora, as it was found parasitic on *Sph. nivalis* on the Berner glacier in Switzerland.

It appears that the Arctic regions possess a microscopic fauna as well as flora. The limits of this notice will only permit a reference to p. 116, where the small animals of which this fauna consists are described. One fact connected with these little creatures may be mentioned. With the object of a further study of the algæ, Prof. Wittrock put a portion of the dried material brought from Spitzbergen into distilled water. He found that not only the algæ came to life again, a fact which he had before observed with respect to red snow, but what was more astonishing, even the little worms revived, and ate a great deal of food, which could be distinguished under the microscope as the red lish-yellow contents of the intestinal canal of these transparent, colourless creatures.

The work is illustrated by two woodcuts and by five lithographic plates, one of which contains figures from drawings by Prof. Wittrock of some of the plants; the others consist of views from drawings by Dr. Berggren, of the inland ice of Greenland, representing localities from whence portions of the material containing the ice and snow flora were obtained.¹ The view of the intermittent spring which the travellers met with about 45 kilomètres from the coast, and which, bursting from a cleft in the ice, throws up a jet of water to a great height, is of special interest from the indications it gives of the probable existence of warm conditions in the interior of Greenland. It will be observed that the "sky-line" of the distance in some of the views shows an undulating outline, suggesting a hilly country in the interior.

MARY P. MERRIFIELD

NOTES

THE Lords of the Committee of Council on Education have, by a recent minute, decided to withdraw the prizes hitherto given to candidates in the Science Examinations who obtain a first class in the elementary stage of the various subjects of science, substituting certificates of merit, and retaining only the prizes given in the advanced stage. The money hitherto devoted to prizes will be employed in providing thirty-six National Scholarships—twelve each year—which will be offered in competition to students of the industrial classes, and awarded at the annual examinations of the department. The National Scholarship will be tenable, at the option of the holder, either at the Normal School of Science, South Kensington, or at the Royal College of Science, Dublin, during the course for the Associateship—about three years. The scholar will receive 30s. a week during the session of about nine months in the year, second-class railway fare to and from London or Dublin, and free admission to the lectures and laboratories. This is a most important step in advance.

WE have already announced that the Thirty-second Annual Meeting of the American Association for the Advancement of Science will be held at Minneapolis, Minnesota, from August 15-21 next. A Local Committee has also been formed to carry out the arrangements at Minneapolis, and members expecting to attend the meeting are requested to send a notification to that effect to its secretary, Prof. H. N. Wurchell, Minneapolis, without delay. Full titles of all the papers to be read at the meetings

¹ Those who are interested in these algæ may like to know that specimens of fourteen of them are included in the *Fasciculi* of dried freshwater algæ distributed by Prof. Wittrock and Dr. Otto Nordstedt, of which ten parts have already appeared. The 11th fasciculus, containing other portions of the Arctic flora, will shortly be issued at Lund, Uppsala, and Stockholm, under the following title:—"Algæ aquæ dulcis exsiccate præcipue Scandinavicas quas adiectis algis marinis chlorophyllaceis et phycochromaceis distribuerunt Veit Wittrock et Otto Nordstedt."

¹ Analyses of kryokonit will be found at pp. 95, 96.